CLAIMS

1. A poly(arylene sulfide) having the following properties (a) to (d):

(a) melt viscosity being 1 to 3,000 Pa·s as measured under conditions of a temperature of 310°C and a shear rate of 1,216 sec^{-1};

(b) pH being 7.0 to 12.0 as measured in a mixed solvent of water/acetone (volume ratio = 2/1);

(c) crystallization temperature being at most 220°C as measured in the course of lowering the temperature of the polymer at a rate of 10 °C/min from a molten state at a temperature of 340°C; and

(d) whiteness degree being at least 70 as measured in the form of a melt molded or formed product.

2. The poly(arylene sulfide) according to claim 1, which further has the following property (e):

(e) a ratio MV_2/MV_1 being at least 0.80, wherein MV_2 is a melt viscosity value measured at a shear rate of 1,216 sec^{-1} after held for 30 minutes at 310°C and MV_1 is a melt viscosity value measured at a shear rate of 1,216 sec^{-1} after held for 5 minutes at 310°C.

3. The poly(arylene sulfide) according to claim 1, which further has the following property (f):

(f) content of a low-molecular weight component

extracted by Soxhlet extraction with chloroform being at most 5.0% by weight.

4. The poly(arylene sulfide) according to claim 1, wherein the pH measured in the mixed solvent of water/acetone (volume ratio = 2/1) is 7.5 to 11.5, and the crystallization temperature measured in the course of lowing the temperature of the polymer at a rate of 10 °C/min from a molten state at a temperature of 340°C is at most 210°C.

5. The poly(arylene sulfide) according to claim 2, wherein the ratio MV_2/MV_1 is at least 0.85.

6. The poly(arylene sulfide) according to claim 3, wherein the content of the low-molecular weight component extracted by Soxhlet extraction with chloroform is at most 3.0% by weight.

7. The poly(arylene sulfide) according to claim 1, which is a poly(arylene sulfide) obtained by polymerizing a sulfur source and a dihalo-aromatic compound in the presence of an alkali metal hydroxide in an organic amide solvent.

8. A process for producing a poly(arylene sulfide) by polymerizing a sulfur source and a dihalo-aromatic

compound in an organic amide solvent, which comprises:

(I) in a charging step, controlling charged amounts of the respective components in such a manner that the alkali metal hydroxide is present in a proportion of 1.00 to 1.09 mol per mol of the sulfur source,

(II) in a polymerization step, polymerizing the sulfur source and the dihalo-aromatic compound in the presence of the alkali metal hydroxide in the organic amide solvent,

(III) in a washing step, washing a polymer formed in the polymerization step repeatedly at least twice with a washing liquid composed of water, a hydrophilic organic solvent or a mixed liquid thereof, and at this time, washing the polymer with water or the mixed liquid at a final washing stage, and controlling washing conditions in such a manner that the pH of the washing liquid after the washing falls within a range of 8.0 to 11.0, and

(IV) in a collecting step after the washing step, collecting a polymer having the following properties (a) to (d):

(a) melt viscosity being 1 to 3,000 Pa·s as measured under conditions of a temperature of 310°C and a shear rate of 1,216 sec^{-1};

(b) pH being 7.0 to 12.0 as measured in a mixed solvent of water/acetone (volume ratio = 2/1);

(c) crystallization temperature being at most 220°C as measured in the course of lowering the temperature of the polymer at a rate of 10 °C/min from a molten state at a

temperature of 340°C; and

(d) whiteness degree being at least 70 as measured in the form of a melt molded or formed product.

9. The production process of the poly(arylene sulfide) according to claim 8, wherein the production process of the poly(arylene sulfide) comprises the following steps 1 to 5:

(1) a dehydration step 1 of heating and reacting a mixture containing an organic amide solvent, an alkali metal hydrosulfide and an alkali metal hydroxide in a proportion of 0.95 to 1.05 mol per mol of the alkali metal hydrosulfide to discharge at least a part of a distillate containing water from the interior of the system containing the mixture to the exterior of the system;

(2) a charging step 2 of adding an alkali metal hydroxide and water to the mixture remaining in the system after the dehydration step, as needed, in such a manner that the alkali metal hydroxide and water are present in proportions of 1.00 to 1.09 mol and 0.5 to 2.0 mol, respectively, per mol of a sulfur source (hereinafter referred to as "charged sulfur source") including the alkali metal hydrosulfide;

(3) a polymerization step 3 including a first-stage polymerization step 3-1 of adding a dihalo-aromatic compound to the mixture to subject the sulfur source and the dihalo-aromatic compound to a polymerization reaction at a temperature of 170 to 270°C, thereby forming a

prepolymer that a conversion of the dihalo-aromatic compound is 50 to 98%, and a second-stage polymerization step 3-2 of controlling the amount of water in the reaction system after the first-stage polymerization step so as to bring about a state that water is present in a proportion of 2.0 to 10 mol per mol of the charged sulfur source, and heating the reaction system to 245 to 290°C, thereby continuing the polymerization reaction;

(4) a washing step 4 of washing a polymer formed in the polymerization step after the polymerization step repeatedly at least twice with a washing liquid composed of water, a hydrophilic organic solvent or a mixed liquid thereof, and at this time, washing the polymer with water or the mixed liquid at a final washing stage, and controlling washing conditions in such a manner that the pH of the washing liquid after the washing falls within a range of 8.0 to 11.0; and

(5) a collecting step 5 of separating the polymer from the washing liquid after the washing step and drying the polymer.

10. The production process according to claim 8, wherein the washing conditions at the final washing stage are controlled in such a manner that the pH of the washing liquid after the washing falls within a range of 8.0 to 11.0, by

(i) a method of using a washing liquid to which an

acid or basic compound is added,

(ii) a method of controlling the number of washing runs,

(iii) a method of controlling the amount of the washing liquid to the polymer, or

(iv) a method of combining these methods.

11. The production process according to claim 8, wherein in the washing step, water is used as the washing liquid at the final washing stage.

12. The production process according to claim 8, wherein the hydrophilic organic solvent used in the washing step is at least one aprotic organic solvent selected from the group consisting of ketone solvents, nitrile solvents and amide solvents.

13. The production process according to claim 8, wherein the hydrophilic organic solvent used in the washing step is an alcohol solvent.

14. The production process according to claim 8, wherein the hydrophilic organic solvent used in the washing step is acetone.

15. The production process according to claim 8, wherein in the washing step, washing with the hydrophilic

organic solvent or the mixed liquid composed of water and the hydrophilic organic solvent is conducted, and washing with water is then conducted.

16. The production process according to claim 15, wherein the mixed liquid composed of water and the hydrophilic organic solvent is a mixed liquid containing water and the hydrophilic organic solvent within a range of from 1:99 to 99:1 in terms of a weight ratio.

17. The production process according to claim 15, wherein in the washing step, the washing with a mixed liquid composed of water and the hydrophilic organic solvent and containing water in a proportion of 1 to 60% by weight is conducted, and washing with water is then conducted.

18. The production process according to claim 8, wherein in the washing step, the polymer is washed repeatedly until the content of a low-molecular weight component extracted by Soxhlet extraction with chloroform is reduced to at most 5.0% by weight.

19. The production process according to claim 8, wherein in the collecting step, a polymer further having the following property (e) is collected

(e) a ratio MV_2/MV_1 being at least 0.80, wherein MV_2

is a melt viscosity value measured at a shear rate of 1,216 sec^{-1} after held for 30 minutes at 310°C and MV_1 is a melt viscosity value measured at a shear rate of 1,216 sec^{-1} after held for 5 minutes at 310°C.

20. The production process according to claim 8, wherein in the collecting step, a polymer further having the following property (f) is collected

(f) content of a low-molecular weight component extracted by Soxhlet extraction with chloroform being at most 5.0% by weight.